

APRIL/MAY 2024

**GECA14A/DECA14A — DIGITAL LOGIC
FUNDAMENTALS**

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Find the Hexadecimal equivalent of Decimal number 46687.
2. What is 2's Complement?
3. Define the term – Decoders.
4. Distinguish between Half-adder and Full-adder.
5. What is Flip-flop?
6. Define the term – Counters.
7. What is Scratch pad memory?
8. What is Microprogramming?
9. Define the term – Instruction set.
10. What is meant by Microprogram Control?

SECTION B — (5 × 5 = 25 marks)

Answer ALL the questions.

11. (a) Using 10's Complement, explain the method to subtract $72532 - 3250$.

Or

- (b) Write short notes on different categories of Binary codes.

12. (a) Implement NOT, AND and OR Gates by using NAND Gates.

Or

- (b) Describe the functions of Binary Parallel Adder.

13. (a) Discuss on Triggering of Flip-flops.

Or

- (b) Explain the working of Synchronous Counters.

14. (a) Describe about Status registers.

Or

- (b) Discuss on the procedure in Design of Shifters.

15. (a) Explain about Timing and Control, and Execution of Instructions.

Or

- (b) Describe the functioning of Hard-wired control.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Simplify the Boolean function $F(w, x, y, z) = \sum(0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14)$ using K-Map.

17. Explain the working of Multiplexers in detail.

18. Describe the organization and functioning of Shift registers.

19. Discuss on the Design procedure of ALU.

20. Explain the Design of Accumulator.
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